



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

cu

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/041,004	01/07/2002	Howard Gordon Zolla	SJ0920010034US1	4715
7590	11/18/2003		EXAMINER	
Walter W. Duft 10255 Main Street, Suite 10 Clarence, NY 14031			NGUYEN, DONGHAI D	
			ART UNIT	PAPER NUMBER
			3729	
DATE MAILED: 11/18/2003				

Please find below and/or attached an Office communication concerning this application or proceeding.

## ***Office Action Summary***

Application No. 10/041,004	Applicant(s) ZOLLA, HOWARD GORDON
Examiner Donghai D. Nguyen	Art Unit 3729

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 07 January 2002.

2a)  This action is FINAL.                            2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4)  Claim(s) 1-30 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5)  Claim(s) \_\_\_\_\_ is/are allowed.

6)  Claim(s) 1-30 is/are rejected.

7)  Claim(s) \_\_\_\_\_ is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)  The proposed drawing correction filed on \_\_\_\_\_ is: a)  approved b)  disapproved by the Examiner

    If approved, corrected drawings are required in reply to this Office action.

12)  The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)  All b)  Some \* c)  None of:

1.  Certified copies of the priority documents have been received.
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14)  Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a)  The translation of the foreign language provisional application has been received.

15)  Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1)  Notice of References Cited (PTO-892) 4)  Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_ .  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948) 5)  Notice of Informal Patent Application (PTO-152)  
3)  Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4. 6)  Other: \_\_\_\_\_ .

## **DETAILED ACTION**

### ***Specification***

1. The abstract of the disclosure is objected to because it exceeds 150 words in length.

Correction is required. See MPEP § 608.01(b).

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "remove spacer layer material form said trench bottom" (claim 1, line 11-12, claim 11, lines 10-11 and claim 21, lines 12-13) is vague and indefinite. It is unclear how to ~~remove spacer layer material form said trench bottom when the spacer layer material is deposited only the trench sidewalls as recited in previous step.~~

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 1-2, 10-12, 20-22 and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent 6,540,928 to Kobrin et al.

Regarding claims 1, 11, and 21, Kobrin et al. disclose a method for reducing feature size in a thin film magnetic write head using low temperature deposition coating of photolithographically-defined trenches, comprising the steps of: forming a base layer (50); applying a plating seed layer (51) over said base layer; applying a photoresist layer (52) over said plating seed layer to a desired thickness; defining a trench (60) in said photoresist layer that exposes said plating seed layer, said trench having substantially vertical side walls and a bottom defined by said plating seed layer (Fig. 4); depositing an insulative spacer layer (62/64; 72/77) using a low temperature chemical vapor deposition process to cover said trench side walls; anisotropically etching horizontal portions of said spacer layer to remove spacer layer material from said trench bottom to expose said plating seed layer while leaving intact vertical portions of said spacer layer that cover said trench side walls, thereby defining a narrowed trench (Fig. 4); electroplating metallic material (65; 78) onto said plating seed layer to form a structure in said narrowed trench; stripping away said photoresist layer; and stripping away said spacer layer

vertical portions; whereby a structure of reduced feature size is formed (Fig. 2, step 211; Fig. 4, step 411).

Claims 2, 12, and 22 also met as set forth above.

Regarding claims 10, 20, and 30, see col. 5, lines 3-6.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3-7, 13-17, and 23-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobrin et al in view of US Patent 4,871,630 to Giammarco et al.

Kobrin et al do not disclose the spacer layer comprises a material from the group consisting of semiconductors, metal oxides, metal nitrides, tantalum oxide, silicon dioxide and silicon nitride; the spacer layer is deposited at a thickness of up to about 200 nm; and the chemical vapor deposition process is performed at a low temperature.

However, Giammarco et al disclose the spacer layer comprises a material from the group consisting of semiconductors, metal oxides, metal nitrides, tantalum oxide, silicon dioxide and silicon nitride (Col. 4, lines 31-33); the spacer layer is deposited at a thickness of up to about 200 nm (Col. 4, lines 49-51); and the chemical vapor deposition process is performed at a temperature that does not cause deformation of said trench defined in said photoresist layer (col. 4, line 33-36) for forming a narrow and deep trench (Col. 2, line 36).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Kobrin et al to have the spacer layer comprises a material from the group consisting of semiconductors, metal oxides, metal nitrides, tantalum oxide, silicon dioxide and silicon; the spacer layer is deposited at a thickness of up to about 200 nm; and the chemical vapor deposition process is performed at a temperature that does not cause deformation of said trench defined in said photoresist layer for forming a narrow and deep trench.

*Allowable Subject Matter*

8. Claims 8-9, 18-19, and 28-29 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

*Conclusion*

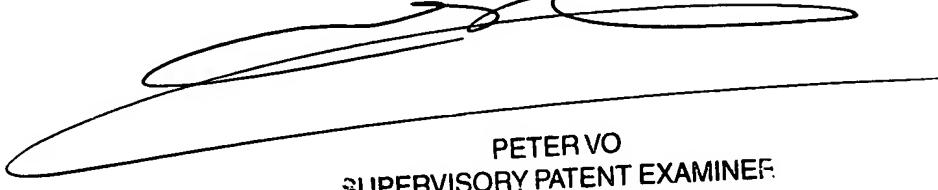
9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donghai D. Nguyen whose telephone number is (703) 305-7859. The examiner can normally be reached on Monday-Friday (9:00-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter D. Vo can be reached on (703) 308-1789. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1148.

DN



PETER VO  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3700